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AUTHOR Contee, Carmen; Gerhard, Christian
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ABSTRACT

Initial activities in a collaborative reading project for tenth graders were based on the categorizing process, which is the basis for understanding the structure of ideas in most textbooks. Ideas are organized in a hierarchy of related categories moving down from the title, through chapter headings, main headings, subheadings, to paragraphs. Comprehension of textbook material is not possible without understanding relationships among different levels of ideas. Students practiced categorizing objects before they were introduced to the textbook, and they then applied their categorizing skills to reading the textbook--an eleventh grade history text. Since this was a pilot program, it was not formally evaluated. However, some of the results were as follows: (1) attendance in reading classes and behavior in class improved dramatically; (2) the writing of well-organized, structured paragraphs also improved; (3) students were able to analyze different types of relationships; and (4) students gained confidence in their ability to know how to approach textbook material and read efficiently for different purposes. (Appendixes include a teacher information sheet, a worksheet for paragraph writing, data on the relationship between categorizing and reading comprehension, and an information sheet on ways in which high school teachers can help students to think more systematically.) (NKA)

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THE BIG SHIFT

From traditional high school reading program to a thinking skills program

Carmen Contee
District of Columbia Public Schools

Christian Gerhard
George Washington University

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THE BIG SHIFT

Introduction.

This is a summary of a collaborative project between a university-based and a high school-based teacher. The school-based teacher requested some assistance in order to better prepare her students for transferring reading skills to content area classes.

The reading teacher would have liked to team with a content area teacher, but this was not possible at the time. However, it was decided to base reading instruction on a textbook in order to 1) prepare students for transfer of skills to such textbooks, and 2) build up additional mental structures (schemata) in students' minds. The only class set of books available was an eleventh grade history text. This presented problems since most of the students in the reading classes were in the tenth grade with reading levels ranging from third to ninth grade. It was felt that careful prereading preparation would enable them to participate actively in class.

Initial activities were based on the categorizing process which is the base for understanding the structure of ideas in most textbooks. The ideas are organized in a hierarchy of related categories moving down from the title, through chapter headings, main headings, subheadings to paragraphs. Comprehension of textbooks material is not possible without understanding the relationships between the different levels of ideas. For example, the reader must keep main headings constantly in mind when reading a section of text with several subheadings.

Students first categorized objects in order to provide them with a concrete image of the grouping and labeling of items. (For a full description of these activities see Gerhard's Making Sense, International Reading Association, 1975). The objects included writing tools, small electrical connectors, symbols of various kinds, sewing items and birthday party items. Groups of three or four students were asked to push the objects into groups and write a label for each group. When this was done, a title for the whole collection was to be composed. There was a possibility of categorizing by function, as above, by four colors, by texture, or by shape, to name the most obvious ones.

With the first categorizing complete, students were asked to comment on each other's labels and titles. Did they convey to someone else the image of the objects on the table? Were they too broad or too narrow? This is the essence of communicating with others.

Students were then instructed to categorize the same objects a second time by any other method than the one just used. The purpose of this activity is to demonstrate that there are many possible ways of grouping ideas and that an item is not fixed in any one group. Labels and titles were again thoroughly discussed. The objects were then arranged in a descending order from the title, through the labels and items as below.

TITLE

Label

(objects)

Label

(objects)

Label

(objects)

This arrangement is similar to a table of contents and the point of preparing it is to draw that parallel. It is possible to say to students: "You have successfully categorized these objects, making up your own labels and title. This is the same basic process a writer uses to organize her or his ideas. If you can successfully learn about grouping ideas, you will also greatly improve your reading comprehension of textbooks."

Students then learned to write basic paragraphs about the labels and objects in front of them. The category label was expanded into a topic sentence and the objects were arranged in a logical order and included in succeeding sentences.

The categorizing activity was referred to frequently when work on the textbook began. The most important point made was that there is a fundamental difference between a label and the group of items. The label makes a general statement about what the items have in common. The items are specific.

Introducing the Textbook

1. The first step was to write up a review of the textbook including its main sections, the organization of the chapters, the visual signals used by the publisher to indicate different levels of headings, how vocabulary was introduced, and how adequate the table of contents and the index were. Such a review provides a framework for thinking about the text.

2. Students were then provided with sets of cards with the main vocabulary for a section written on them. These they categorized in their groups of three or four students in exactly the same way they had categorized the objects. They were first asked to work out word meanings among themselves without further aids in order to draw on the group members' previous knowledge. Attention was drawn to possible similarities with common words and other clues. They were then permitted to look up words. All the labels written were then discussed and students could see that there were different ways of categorizing words just as there were different ways of grouping the objects.

3. The textbook was then brought out and the students looked to see how the author had chosen to group the words and to think of possible reasons why, such as the title of the chapter. The authors' labels, or headings, were studied critically and compared with those written by the students.

4. Headings were then looked at from the point of view of being able to predict what the text might say. Topic sentences were pulled out and analyzed in the same way.

5. The first section to be read was then previewed for any additional information such as maps and illustrations. Students were asked what the section was going to be about as a review of the main structure of ideas. Reading then took place.

6. Succeeding sections were covered in a similar but less elaborate way with the main emphasis always on the structure of ideas.

7. Comprehension questions focused on the relationships between ideas in a section and on inferences that could be made. Important facts were always studied in context.

Reading and Writing-to-Learn Activities

1. The reading material chosen was a selection of chapters about U.S. history from World War II to the 1970's. This was considered important information for understanding the situation today and recent enough for students to have personal connections with the period. In order to have good reading comprehension students need to have actual information related to the subject. If there is no previous knowledge of a subject, students have no way of relating the new information to that stored in memory.

2. All thinking skills were taught using the material in the textbook. For example, after learning how to think about simple analogies, students were asked daily to work out analogies based on the text. "Mussolini was to Italy as Hitler was to _____," or "London is to the United Kingdom as Paris is to _____." The different kinds of relationships in these analogies were always stated. They might involve part/whole, within category, or cause and effect relationships, to name a few.

3. Structured paragraphs based on categories from the text were written frequently as a form of review, practice in using language accurately, or as a means of evaluating comprehension.

4. Summary writing was based on the idea of forming a category from the main ideas of a section or chapter and expanding the category into one or more paragraphs. When appropriate, comparisons were drawn up in two columns as preparation for writing.

4. Students wrote in their journals upon arriving in class and were also asked to comment on events and ways of thinking being studied. Writing was treated as a helpful way of consolidating and organizing your own thoughts. Each student's thoughts and opinions were treated as being an essential element of comprehension. At the same time it was emphasized that every minute of class time is valuable and not to be wasted.

Evaluation

1. This was a pilot program that developed as it went along so that formal evaluation was not possible.

2. Attendance in reading classes improved dramatically. Students also came for help before and after school.

3. Behavior in class moved from polite boredom with frequent inattention to concentrated attention. A point system was instituted so that all good behavior could be rewarded. Student work was preserved in folders that could be displayed to visitors.

4. The writing of structured paragraphs with a general topic sentence and well-organized specific ideas improved. However, this is a skill which should have been addressed earlier in the students' school careers and which requires a great deal of practice.

5. Students were able to analyze different types of relationships between ideas and to look for them. Again, this is not a thinking skill that can be addressed in a few months. It should be an ongoing project over several years.

6. Students gained confidence in their ability to know how to approach textbook material and read efficiently for different purposes. Several of them commented on their improvement in other classes.

* * * * *

The following pages include three pages about the relationship of categorizing to reading and two pages of suggestions for high school teachers on how to help students think more systematically.

TEACHER SHEET

CATEGORIES AND PARAGRAPHS

1. The students know that they can see similarities and differences between objects and form category labels (generalizations) once they have completed categorizing the objects at least two ways. The idea that the category label states a relationship between the objects and is not a description will take longer to grasp.

2. The students are now ready to begin applying what they already can do with concrete objects to school materials. Being able to both read and write paragraphs with topic sentences is important. The structure of categories can help make this easier.

3. On the student sheet is an example of a paragraph which might be written about objects like the ones on the table. The students should try writing a similar paragraph while they still have the objects in front of them. The category label is expanded to become the topic sentence, which makes a general statement about the relationship between the objects. The objects are then used to complete the paragraph.

4. The next step is to print important vocabulary from curriculum materials on cards and have the students categorize them in exactly the same way that they categorized the objects. They should come up with different ways of categorizing the words and that presents an opportunity to discuss the words from more than one point of view. There is almost always more than one logical way of categorizing information. It is important for students to struggle to make decisions and then defend these decisions. Being "right" or "wrong" is not important in these activities.

5. If the vocabulary is categorized before teaching begins, then the students are already familiar with the main words and have an idea how they are related. They have used their own previous experience for deciding how to categorize so that the new information is connected to the old.

6. Another activity is to read a clear topic sentence from a school book students are going to use for a lesson and ask students to predict what will be in the rest of the paragraph. All the suggestions should be written on the chalkboard. The paragraph is then read to check and see which ideas were used. Students should be reminded that the topic sentence is like a category label.

7. A category from school material can be written on the board and students asked to write a paragraph based on it. Or they can be asked to reduce a paragraph in a book to a category. Another good activity is for students to write a paragraph based on their own category, then exchange papers and reduce the paragraph to a category.

Student name_____

Teacher _____

WRITING PARAGRAPHS BASED ON YOUR CATEGORIES

1. You have looked at objects and said how they were alike and how they were different. You put objects into groups and gave each group a name, or label. This label of yours said that all the objects in one group were related to each other in a special way. Good work! You have created categories.

2. Now let us see how categories can help us to write a paragraph. We will take the category label and turn it into a topic sentence which will say what the whole paragraph is about. It makes a general statement. Then the names of the objects can be used to fill in the paragraph so that everything fits together. Here is an example of how to do it.

CATEGORY	PARAGRAPH
(label)	(topic sentence)
Some Kinds of Red Fruit	There are some kinds of fruit that are red. In the summer people like to eat watermelon. Some apples are red and ripen in the late summer or fall. Red grapes also ripen in the fall.
watermelons	
apples	
grapes	

3. Now you try! Look at one of your categories on the table. Write the label on the top line and the names of the objects below that. Now turn this category into a paragraph like the one above. Using "There are . . ." is an easy way to get started.

CATEGORY	PARAGRAPH
(label)	(topic sentence)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
	_____
	_____
	_____

4. Now you are ready to make up a category of your own and write a paragraph based on that. How about Popular Pets, Favorite TV Shows, or Food I Like to Eat?

The Relationship of Categorizing to Reading Comprehension

1. Both depend on the perception of similarities and differences, and the act of generalizing about these.
2. Both depend up to a point on proficiency in language. First steps in categorizing may take place intuitively.
3. Categorizing aids the ability to project, or predict, from seen patterns. Reading comprehenshion, especially at the higher levels, depends on this.
4. Categorizing, or finding patterns, is helpful to memory. This skill is used to improve recall in reading comprehension.
5. Each person must build a structure of patterns in the brain in which to "file" new information. This is done by categorizing. This basic structure is used when reading. The reader has to add to the structure when there is an overload.

Reading Comprehension Directly Involving Categorizing Ability

1. Recognizing topic sentences. Since paragraphs are so often based on categories, recognizing the general statement as being completely different from the specific details cannot be done without an understanding of categorizing.
2. Outlining. This requires an understanding of a hierarchy of categories and complex relationships between them.
3. Finding the main idea. Readers must often discover a category within several paragraphs or even pages. The main idea, even when it is not stated, will be the heading for this category.
4. Understanding the role of many function words. Many function words state the relationship of ideas on the printed page. Many of these relationships directly involve categories. For example: 1)*because* or *as a result* may indicate several effects caused by an event; 2) words like *and, in addition, or finally* are like + signs indicating membership in the same category. Many relationships indicated by function words cannot be understood unless the underlying category is grasped.
5. The role of basic root words in deciphering new words. Readers must notice the similarities between words like *subordinate, ordinary, disorderly,* and *ordinal* and form a category, "Words based on order", to grasp the use of structural analysis.

Christian Gerhard

What can high school teachers do
to help students think more systematically?

1. Require students to think through relationships between items of information (historical dates, members of biological classes, parts of speech, or number sets for example). Students should then themselves state in precise language how the items are related, using complete sentences.
   Example: 1776, 1812, 1865. "These dates indicate the beginnings of wars fought on U.S. soil."
   or fruit, sand, money. "These words are collective nouns."

2. Require students to pay close attention to key words and signals in text materials which indicate certain kinds of relationships.
   Example: -and, secondly, finally, are all words that add to an existing category.
   -because, as a result,, consequently, are all words that indicate a cause and effect relationship.
   -more than, less than, different from, are all words that indicate a comparison with something.

3. Require the frequent writing of structured paragraphs about curriculum material being studied. These paragraphs should contain a clear, general statement in a topic sentence, and supporting sentences in a logical order.

4. Require students to have needed equipment ready at the very beginning of class and to complete work as rapidly as possible, following directions carefully. (Directions should be given in numbered, simple sentences which outline exactly what to do and these should not be repeated.) Quick copying must be learned.

5. Require every assignment to have a heading which clearly indicates the meaningful purpose of the task and ask students what they are doing and why.

6. Require students to predict information on the basis of having observed given information and identified its pattern or meaning.
   Example: -The Allies issued an ultimatum to Hitler that an invasion of Poland would mean war. On September 1, 1939, Germany invaded Poland. Question: What was the result?

7. Require students to explain the structure of ideas in text materials. Visual cues (headings, subheadings, charts, maps etc.) to structure should initially be pointed out. Tests should include organizing lists of items, writing headings for items, writing appropriate items under headings, writing structured paragraphs about categories of subject matter.

8. Students must learn through training and rewards that the way you go about solving a problem or answering a question is just as important as giving an answer. Highly intelligent people spend most time analyzing a question or problem compared to stating an answer. If only answers are punished or rewarded, then students will not take the time or learn systematic ways of analyzing questions or problems. Therefore, evidence of of analysis must be required and rewarded,with the pace of the analysis constantly being stepped up. Part of the evidence will be key words indicating that a comparison, a description, a summary, an outline, an inference, or supporting arguments are called for. All work of this kind should be done with the curricular material being studied.

9. Students must learn to use all of their prior knowledge of a subject since no new information will be understood or retained unless it can be tied to or associated with previously learned information. It is therefore necessary to spend a considerable amount of time at the beginning of new units establishing what is to be accomplished and helping students to review information in their memories. Analogies can be a very helpful tool for making connections. Opposites can also be helpful.

10. Students must show that they are able to analyze how words are put together to create meaning so that they are then able to understand new vocabulary encountered in reading.
Examples:-prefixes such as in, into, intra, para, extra, syn etc. indicate time and space relationships.
-suffixes such as -ant,-ent, -ess, -ee, or -ist indicate that the word is a noun.
-aera, auto, demo, graph, phob, poly, or scope are Greek roots which always have the same basic meaning.

11. Students should know how to back up statements with supporting information or data and how to look for supporting information in text (or recognize its absence).

12. All thinking skills should be consistently practised with the curricular materials students are expected to learn. Numerous studies have indicated that there is little or no transfer to subject matter from working on study skills in isolation. Part of the reason for this is that students often fail to find the exercises meaningful or adequately rewarded.